## Remarks

This Amendment is responsive to the September 27, 2005 Office Action. Reexamination and reconsideration of claims 1-37 is respectfully requested. Claim 30 has been amended to address a grammatical issue. No new matter has been added by the amendment.

## Summary of The Office Action

At several points the Office Action refers to Galbraith (U.S. Pat. No. 6,490,635). This patent number is assigned to Holmes, which is also cited as a reference. Thus, the Applicant assumes that "Galbraith" is a typographic error and the Office Action intended to refer to Holmes throughout.

Claims 1-9, 13, 15-18, 20, 22-27, 30-35 and 37 were rejected under 35 U.S.C. §102(e) as being anticipated by Holmes (U.S. Pat. No. 6,490,635).

Claims 10, 14, 19, 21 and 28-29 were rejected under 35 U.S.C. §103(a) as being unpatentable over Holmes in view of Chamberlin et al. (PGPUB: US 2004/0223722).

Claims 11-12 were rejected under 35 U.S.C. §103(a) as being unpatentable over Holmes.

Claim 36 was rejected under 35 U.S.C. §103(a) as being unpatentable over Holmes in view of Li et al. (USPN: 6,256,705).

## The Claims Patentably Distinguish Over the References

The application describes an access controller for storage devices. The access controller is configured to selectively control access requests to a storage device. The control is exercised by metering access to a first region and by not metering access to a second region. In some examples these two regions may correspond to a "hot" region and a "cold" region and may geographically correspond to a region near the disk perimeter (hot) and a region near the disk hub (cold). The access control may be exercised selectively based, for example, on how many accesses are made to a cold region, on a ratio of accesses to a cold region versus to a hot region, and so on.

Thus, in one example, access to a cold region may be controlled (e.g., metered) while access to a hot region may not be controlled. Additionally, in some examples the access controller may determine to which region data is to be written or from which region data is to be read based on attributes like the priority of data associated with an access request, an application associated with an access request, a file associated with an access request, and so on. After determining the region associated with an access request, the access controller may then selectively exercise control (e.g., meter) a request. Thus, the control is exercised based on whether an access is associated with a region and on a current state of a storage device concerning access requests.

Holmes is the primary reference upon which the rejections are based. Holmes describes a system that solves a problem associated with head-proximity based reordering. In head-proximity based reordering disk accesses can be stored and reordered to minimize head movement and thus hopefully improve disk performance. However, reordering can create problems. For example, if a write is postponed and a read is allowed to proceed before the write, and the read and the write overlap, then the later-issued read may not read values that should have been written by the earlier-issued but subsequently reordered/delayed write. Thus, a timing problem is generated by head-proximity based reordering. Holmes addresses this problem by determining that a certain reordering may create the timing problem, setting a flag that indicates that a timing problem is being created, and re-reordering the access requests by basically putting them back in their original temporal order. All of this work is done irrespective of the location with which an access is associated.

Holmes describes in its background section a system where the priority of a disk access is determined based on proximity to head position, not based on membership in a priority group as is described and claimed in the application. In Holmes, the "metering" or control that is exercised is not control so much as it is selection. The selection is based solely on whether one access will require the head to move more than another access. The access that will cause the least amount of motion will be given priority and accesses will be re-ordered to reflect this priority. The control is not exercised based on whether an access is associated with a pre-defined region like a "hot" region or a "cold" region. Thus, it follows that Holmes does not say anything about metering accesses to a first region while allowing un-metered access to a second region. In Holmes, to the extent that any accesses are metered, all accesses are metered. Furthermore, to the extent that any accesses are metered, they are metered based on proximity to a current head position, rather than based on membership in a predefined group that is assigned to a predefined region.

At one point, in paragraph 5, the Office Action asserts that Holmes teaches that accesses to the inner region of storage have priority over accesses to the outer region of storage. If accurate this would teach away from the claims and be an additional reason to remove the rejections. However, this is not accurate. While not accurate, it sheds light on the misunderstanding of the relation between Holmes and the claims. Holmes teaches that access may be reordered to give priority to accesses closest to the current head position. If the head position is near the hub, priority is given to accesses near the hub. If the head is in the middle, priority is given to accesses near the middle. If the head is near the perimeter, priority is given to accesses near the perimeter. In Holmes priority is determined by proximity to head location, wherever the head may be, and not by membership in a high or low priority group with which a hot or cold region has been associated. Furthermore, priority is not determined based on a relationship between an access and an application, a region, a file, an object, and so on.

**35 U.S.C. §102**

For a 35 U.S.C. §102 reference to anticipate a claim, the reference must teach every element of the claim. Section 2133 of the MPEP recites:

> A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987).

As has been described above, Holmes does not teach elements of the independent claims. Specifically, Holmes does not teach metering access to data within a first region while allowing un-metered access to data in a second region. To the extent that Holmes meters, it meters every access and bases the metering on head-proximity, not region association. Additionally, Holmes does not teach performing this metering in a database system.

**35 U.S.C. §103**

To establish a prima facie case of 35 U.S.C. §103 obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. MPEP 2143.01 Second, there must be a reasonable expectation of success. MPEP 2143.02 Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. MPEP 2143.03 Additionally, the teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in applicant's disclosure. In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). This requirement is intended to prevent unacceptable "hindsight reconstruction" where Applicant's invention is recreated from references using the Application as a blueprint.

Here, at least the third criteria described in MPEP 2143.03 is not satisfied since the combination of references does not teach or suggest all the claim limitations. None of the references, alone and/or in combination, teach selective region based metering.

Additionally, none of the references, alone and/or in combination teach establishing numerical count based thresholds upon which selective metering can be based. Instead, the references teach head-proximity based reordering and time deadline based reordering. Thus, none of the claims are obvious for at least these reasons.

### Ascertaining Skill Level of One Skilled In The Art

The MPEP requires that the Office Action ascertain and describe the level of ordinary skill so that objectivity can be maintained. MPEP §2141.03 reads:

> The importance of resolving the level of ordinary skill in the art lies in the necessity of maintaining objectivity in the obviousness inquiry. *Ryko Mfg. Co. v. Nu-Star, Inc.*, 950 F.2d 714, 718, 21 USPQ2d 1053, 1057 (Fed. Cir. 1991). The examiner must ascertain what would have been obvious to one of ordinary skill in the art at the time the invention was made, and not to the inventor, a judge, a layman, those skilled in remote arts, or to geniuses in the art at hand. *Environmental Designs, Ltd. v. Union Oil Co.*, 713 F.2d 693, 218 USPQ 865 (Fed. Cir. 1983), *cert. denied*, 464 U.S. 1043 (1984).

Here the Office Action neither ascertains nor reports on the level of ordinary skill in the art. For this additional reason all the obviousness rejections are improper.

Each claim will now be discussed.

### Independent Claim 1

Claim 1 was rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Pat. No. 6,490,635. Claim 1 is directed to a system for a storage device. Claim 1 recites an access controller that controls access requests to a storage device. The access controller meters access to data in a first region while allowing un-metered access to a second region. The reference does not disclose this region based metering. Instead, the reference describes head-proximity based reordering and timing problem resolution through re-reordering.

The Office Action refers to C1, L49-62 as providing support for the assertion that the claim is anticipated. This section discusses command reordering. In particular, it reads "if command order can be changed so that commands accessing data in areas closer to the head are given greater priority, then the performance of the drive improves." C1, L51-54. This clearly illustrates that proximity based ordering is occurring. This proximity based ordering is not the same as region based priority and region based metering. In fact, the reference teaches away from giving priority to a perimeter region on a disk when it recites "command reordering would efficiently execute the first and third commands sequentially." C1, L60-62. The first and third commands described are both closer to the disk hub and the delayed second command is closer to the disk perimeter. Thus, the reference teaches away from region based metering as claimed.

Since claim 1 recites features not taught or suggested by the reference, claim 1 patentably distinguishes over the reference. Accordingly, dependent claims 2-12 also patentably distinguish over the reference and are in condition for allowance.

Claim 2

Claim 2 was rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Pat. No. 6,490,635. Claim 2 depends from claim 1. Claim 1 has been shown to be not anticipated and thus this claim is similarly not anticipated. Additionally this claim recites the system being embedded in a database system, an operating system, and/or an application. Since the reference does not teach the system, it does not teach the system being embedded in another system. Furthermore, the reference only mentions that a disk drive may have firmware. A reference that simply mentions that a disk drive has firmware does not anticipate a system for a storage device being embedded in a location outside the storage device. For this additional reason this claim is not anticipated.

Claim 3

Claim 3 was rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Pat. No. 6,490,635. Claim 3 depends from claim 1. Claim 1 has been shown to be not anticipated and thus this claim is similarly not anticipated. Additionally this claim recites the system including an allocation logic that determines a priority for data to be written. Additionally, the claim recites the allocation logic causing the data to be stored in a first region or a second region based on priority. Since the reference does not teach the system, it does not teach the system including an allocation logic. Since the reference does not teach analyzing priority, it does not teach determining priority. While the reference mentions establishing an order for access requests, this order depends on proximity to a read/write head, not on a priority. Furthermore, the reference does not teach two pre-defined regions that are associated with priority. While the Office Action takes official notice that disk drives have regions, these regions (e.g., logical address blocks) do not anticipate the hot and cold or high and low priority regions described in the application. For this additional reason this claim is not anticipated.

Claim 4

Claim 4 was rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Pat. No. 6,490,635. Claim 4 depends from claim 3. Claim 3 has been shown to be not anticipated and thus this claim is similarly not anticipated. Additionally this claim recites that the data may include a plurality of priority levels. The reference does not describe data having different priority levels. While the reference may discuss establishing an order in which accesses are to be made, this order is determined based on read/write head proximity and not on a priority associated with the data. For this additional reason this claim is not anticipated.

Claim 5

Claim 5 was rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Pat. No. 6,490,635. Claim 5 depends from claim 1. Claim 1 has been shown to be not anticipated and thus this claim is similarly not anticipated. Additionally this claim recites that the storage device includes a disk drive(s). The reference talks about disk drives. However the reference does not talk about a system for use with disk drives that includes an access controller that meters access to one region on a disk drive while allowing un-metered access to another region of a disk drive. The reference describes read/write head proximity based reordering for accesses to a disk drive, which does not disclose selective metered and un-metered access to that disk drive. For this additional reason this claim is not anticipated.

Claim 6

Claim 6 was rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Pat. No. 6,490,635. Claim 6 depends from claim 1. Claim 1 has been shown to be not anticipated and thus this claim is similarly not anticipated. Additionally this claim recites that the storage device includes a disk and that the second region is closer to a disk perimeter than the first region. Thus, the claim recites an access controller that allows un-metered access to a region closer to the disk perimeter while metering access to a region farther from the disk perimeter. To the extent that the read/write head proximity based controlling describes controlling access to any track, it describes giving priority to a region closer to the hub. C1, L60-62. This teaches away from this claim. Additionally, the reference merely mentions that a disk drive may have tracks. The claim recites that groups of tracks may be organized into regions and that access may be selectively controlled to these regions. The reference is silent concerning this grouping of tracks into regions, let alone the physical location on the disk (e.g., near perimeter, far from perimeter). For this additional reason this claim is not anticipated.

Claim 7

Claim 7 was rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Pat. No. 6,490,635. Claim 7 depends from claim 6. Claim 6 has been shown to be not anticipated and thus this claim is similarly not anticipated. Additionally this claim recites that the first region and the second region are defined by logical block addresses. The Office Action takes "official notice" that disk memory addresses are given virtual memory address and logical block addresses that are subsequently translated to physical addresses that identify a cylinder/track/sector. While the Office Action is accurate that a disk address may identify a cylinder/track/sector, the Office Action overlooks the fact that the claim recites that a disk will include two regions for which access can be selectively controlled and that the regions may be defined by logical block addresses. The reference does not call out the regions, does not call out defining the regions by logical block address, and thus does not call out selectively controlling access to a region based, at least in part, on a logical block address. For this additional reason this claim is not anticipated.

Claim 8

Claim 8 was rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Pat. No. 6,490,635. Claim 8 depends from claim 1. Claim 1 has been shown to be not anticipated and thus this claim is similarly not anticipated. Additionally this claim recites that the system is embedded in a file system. The Office Action asserts that C1, L22-30 discloses an access controller based system being embedded in a file system. These lines read, "the controller 140 is hardware and associated firmware that interfaces to the host 110 and controls the transfer of data between the disk drive and the controller's data buffer or cache (not shown). The host 110 and disk drive 120 are connected by a bus 112, which provides a standard physical and data link layer between the host 110 and controller 140. Associated protocols provide a standard communications link layer between the host 110 and controller 140. The most common standards ..." This description appears to describe how two items are connected. This description clearly does not describe an access controller being embedded in a file system. No file system is mentioned, described, referred to, or in any way identified. Thus, it follows that an access controlling system embedded in a file system is also not mentioned, described, referred to, or in any way identified. For this additional reason this claim is not anticipated.

Claim 9

Claim 9 was rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Pat. No. 6,490,635. Claim 9 depends from claim 1. Claim 1 has been shown to be not anticipated and thus this claim is similarly not anticipated.

Independent Claim 13

Claim 13 was rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Pat. No. 6,490,635. Claim 13 concerns a method that includes metering access requests to a second region to facilitate improving response times for access requests intended for a first region. Thus, the claim recites selective metering based on region. The reference does not teach this selective metering. To the extent that the reference discloses controlling access, it discloses always controlling access. Furthermore, to the extent that the reference discloses controlling access, it discloses controlling access based on read/write head proximity, not on membership in a pre-defined group. Thus, the claim is not anticipated by the reference. Accordingly, dependent claims 14-19 are similarly not anticipated.

Claim 15

Claim 15 was rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Pat. No. 6,490,635. Claim 15 depends from claim 13. Claim 13 has been shown to be not anticipated and thus this claim is similarly not anticipated. Additionally this claim recites storing data to be metered based on a priority level of the data. The reference discusses establishing a priority for an access based on the proximity of the access source/destination to the current read/write head position. This does not equate to storing data to which access will be controlled (e.g., metered) based on a priority level of the data. The reference does not discuss data priority but rather discusses establishing access request priority. Data and an access request are different things. For this additional reason this claim is not anticipated.

Claim 16

Claim 16 was rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Pat. No. 6,490,635. Claim 16 depends from claim 13. Claim 13 has been shown to be not anticipated and thus this claim is similarly not anticipated. Additionally this claim recites determining whether data will be stored in a first region or a second region. The reference discloses no similar decision concerning where data will be stored. The reference simply determines which request will go first based on the proximity of the request source/destination to a current read/write head position. Determining the position of a read/write head and a proximity to the read/write head does not equate to determining where some data will be stored. For this additional reason this claim is not anticipated.

Claim 17

Claim 17 was rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Pat. No. 6,490,635. Claim 17 depends from claim 13. Claim 13 has been shown to be not anticipated and thus this claim is similarly not anticipated. Additionally this claim recites defining a plurality of regions on the storage device and assigning a metering threshold to selected regions. The Office Action takes "official notice" that a disk drive has a plurality of regions. Having regions and defining regions are different things. In one case, regions are created. In another case, regions are simply used.

Additionally, the Office Action equates assigning a metering threshold to detecting a conflict between overlapping addresses. This logic does not withstand scrutiny. Conflict detection does not selectively control access to a region based on how often that region is being accessed. Rather, to the extent that conflict detection controls access the control is exercised based on preventing a timing conflict. A timing conflict concerns time, an access threshold concerns frequency of access. Time does not equal frequency. For this additional reason this claim is not anticipated.

Claim 18

Claim 18 was rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Pat. No. 6,490,635. Claim 18 depends from claim 17. Claim 17 has been shown to be not anticipated and thus this claim is similarly not anticipated. Additionally this claim recites defining a region by setting an address within the storage device. The Office Action simply takes Official Notice that a disk drive has logical blocks that have logical block addresses. Noting that a device has addresses is different from claiming defining a region based on addresses. In one case a region is being defined, in another case an address is simply being used. Creation and use are different things. For this additional reason this claim is not anticipated.

Independent Claim 20

Claim 20 was rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Pat. No. 6,490,635. Claim 20 recites a method that includes determining a priority level for an I/O request. The reference establishes a priority for a request but does not determine a priority level found in an I/O request or associated with an I/O request. The claim also recites allowing I/O requests having a first priority level to be processed. In the reference, all I/O requests are processed regardless of priority. They may be re-ordered based on read/write head proximity, but they are all processed regardless of priority. The claim also recites limiting I/O requests having a second priority level. The reference does not limit I/O requests. The reference reorders requests and then performs them all based on minimizing read/write head motion. This is not the same as defining two regions, allowing unfettered access to one region, and controlling access to another region, where the regions are predefined. Since the claim recites elements not found in the references, the claim is not anticipated. Accordingly, dependent claims 21 through 24 are similarly not anticipated.

Claim 22

Claim 22 was rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Pat. No. 6,490,635. Claim 22 depends from claim 20. Claim 20 has been shown to be not anticipated and thus this claim is similarly not anticipated. Additionally this claim recites the priority level of an I/O request being determined based on the location of data associated with the request. The reference describes establishing a priority level for an I/O request and then reordering based on the priority level. The application describes examining a data location and determining whether the request will be subjected to selective metering based on the location, where the location is absolute, not relative to a read/write head. For this additional reason this claim is not anticipated.

Claim 23

Claim 23 was rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Pat. No. 6,490,635. Claim 23 depends from claim 22. Claim 22 has been shown to be not anticipated and thus this claim is similarly not anticipated. Additionally this claim recites data adjacent a storage device perimeter receiving the first (un-metered) priority level while data adjacent a storage device hub receives the second (metered) priority level. To the extent that the reference discusses inner or outer regions, it describes giving a higher priority to data located on the inner portion of the storage device. This actually teaches away from the additional limitation in this claim. C 1, L59-61. For this additional reason this claim is not anticipated.

Claim 24

Claim 24 was rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Pat. No. 6,490,635. Claim 24 depends from claim 22. Claim 22 has been shown to be not anticipated and thus this claim is similarly not anticipated. Additionally this claim recites the location of the data being determined based on predetermined addresses within a storage device. The reference does not disclose making decisions based on predetermined addresses. The reference discloses making decisions based on relative positions. Relative positions are not predetermined addresses. Relative positions are calculated based on the proximity to a read/write head. Making a decision based on a relative position is exactly opposite of making a decision based on a predetermined address. For this additional reason this claim is not anticipated.

Independent Claim 25

Claim 25 was rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Pat. No. 6,490,635. This claim recites metering access requests to a first region while not metering access requests to a second region. To the extent that the reference discloses controlling access, the control is not selectively applied but is applied to all requests. In the reference, all requests are subject to re-ordering based on read/write head proximity. In the claim, only requests associated with a certain region are metered.

Additionally, the claim recites the method being stored as processor executable instructions on a computer readable medium. The reference discloses no method being stored on a compute readable medium and thus it follows that it does not disclose the claimed selective metering method being stored as processor executable instructions on a computer readable medium. Thus, this claim is not anticipated.

Accordingly, dependent claims 26 through 34 are similarly not anticipated.

Claim 26

Claim 26 was rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Pat. No. 6,490,635. Claim 26 depends from claim 25. Claim 25 has been shown to be not anticipated and thus this claim is similarly not anticipated.

Claim 27

Claim 27 was rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Pat. No. 6,490,635. Claim 27 depends from claim 25. Claim 25 has been shown to be not anticipated and thus this claim is similarly not anticipated. Additionally this claim recites additional processor executable instructions that cause a processor to store data based on a priority of the data. The reference does not examine the priority of data. The reference prioritizes requests based on read/write head motion. This is not the same as examining the priority of data. Additionally, the claim recites data being stored in either a first region or a second region. The reference discloses no selective control based on predefined regions. For this additional reason this claim is not anticipated.

Claim 30

Claim 30 was rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Pat. No. 6,490,635. Claim 30 depends from claim 25. Claim 25 has been shown to be not anticipated and thus this claim is similarly not anticipated.

Claim 31

Claim 31 was rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Pat. No. 6,490,635. Claim 31 depends from claim 25. Claim 25 has been shown to be not anticipated and thus this claim is similarly not anticipated. Additionally this claim recites the computer readable medium including processor executable instructions for causing a processor to define the first region and the second region. The Office Action takes official notice that storage devices may have different regions. This is true. A storage device may have different regions. But the reference does not describe creating regions. The reference does not describe how the storage device got different regions. While the reference may describe writing to one track before writing to another track based on read/write head proximity, the reference does not describe selective access based on regions that are created by the claimed subject matter. For this additional reason this claim is not anticipated.

Claim 32

Claim 32 was rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Pat. No. 6,490,635. Claim 32 depends from claim 25. Claim 25 has been shown to be not anticipated and thus this claim is similarly not anticipated. Additionally this claim recites allocating data to a selected region. The reference describes reordering access requests based on minimizing read/write head motion. The reference does not describe allocating data. Thus it follows that the reference does not describe allocating data to a selected region. For this additional reason this claim is not anticipated.

Claim 33

Claim 33 was rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Pat. No. 6,490,635. Claim 33 depends from claim 25. Claim 25 has been shown to be not anticipated and thus this claim is similarly not anticipated. Additionally this claim recites the computer-readable medium being integrated in a database system, a file system, an operating system, or a storage device. Since the reference does not describe the claimed computer readable medium it follows that the reference also does not describe integrating the computer readable medium into the type of entities claimed. For this additional reason this claim is not anticipated.

Claim 34

Claim 34 was rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Pat. No. 6,490,635. Claim 34 depends from claim 25. Claim 25 has been shown to be not anticipated and thus this claim is similarly not anticipated. Additionally this claim recites access controller means for metering access requests. The reference describes reordering accesses, not metering accesses. For this additional reason this claim is not anticipated.

Independent Claim 35

Claim 35 was rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Pat. No. 6,490,635. Claim 35 claims a database system. Holmes does not describe a database system. The Office Action does not assert that Holmes describes a database system. Neither the reference nor the Office Action acknowledge that claim 35 claims a database system. Holmes describes a method for reordering access requests in a disk drive. A disk drive is not a database system. Thus, this claim is not anticipated. Accordingly, dependent claims 36-37 are also not anticipated.

Claim 37

Claim 37 was rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Pat. No. 6,490,635. Claim 37 depends from claim 35. Claim 35 has been shown to be not anticipated and thus this claim is similarly not anticipated. Additionally this claim recites the database system including an access controller. Since the reference does not describe a database system it follows that it does not describe a database system that includes an access controller. For this additional reason this claim is not anticipated.

Claim 10

Claim 10 was rejected under 35 U.S.C. §103(a) as being unpatentable over Holmes in view of Chamberlin. As described above, Holmes does not describe each and every element of claim 1. Claim 10 depends from claim 1 and thus is similarly not anticipated. Chamberlin does not cure the defect of Holmes. Chamberlin discloses giving priority to access requests in the following order: read, write, other. Then, if a time based deadline is approaching, Chamberlin discloses an emergency mode where priority is given based on proximity to time based deadline expiration. Thus, elements of claim 1 and claim 10 are still missing, even in the combination of references. Therefore this claim is not obvious.

Additionally, claim 10 recites metering access based on a threshold of access requests directed to data in the first region. This threshold is described as being a numerical count of access requests. Neither reference describes a threshold based on a numerical count. Holmes describes read/write head proximity based decision making while Chamberlin describes read/write/other and time-based decision making. For this additional reason this claim is not obvious.

Claim 14

Claim 14 was rejected under 35 U.S.C. §103(a) as being unpatentable over Holmes in view of Chamberlin. As described above, Holmes does not describe each and every element of claim 13. Claim 14 depends from claim 13 and thus is similarly not anticipated. Chamberlin does not cure the defect of Holmes. Chamberlin discloses giving priority to access requests in the following order: read, write, other. Then, if a time based deadline is approaching, Chamberlin discloses an emergency mode where priority is given based on proximity to time based deadline expiration. Thus, elements of claim 13 and claim 14 are still missing, even in the combination of references. Therefore this claim is not obvious.

Additionally, claim 14 recites the metering including limiting a number of access requests to a second region based on a threshold number of access requests. The threshold is described as being a numerical count of access requests. Neither reference describes a numerical count. Holmes describes read/write head proximity based decision making while Chamberlin describes read/write/other and time-based decision making. For this additional reason this claim is not obvious.

Claim 19

Claim 19 was rejected under 35 U.S.C. §103(a) as being unpatentable over Holmes in view of Chamberlin. As described above, Holmes does not describe each and every element of claim 13. Claim 19 depends from claim 13 and thus is similarly not anticipated. Chamberlin does not cure the defect of Holmes. Chamberlin discloses giving priority to access requests in the following order: read, write, other. Then, if a time based deadline is approaching, Chamberlin discloses an emergency mode where priority is given based on proximity to time based deadline expiration. Thus, elements of claim 13 and claim 19 are still missing, even in the combination of references. Therefore this claim is not obvious.

Additionally, claim 19 recites monitoring a number of access requests and initiating metering when the number of access requests reaches a threshold. The threshold is described as being a numerical count of access requests. Neither reference describes a threshold based on a numerical count. Holmes describes read/write head proximity based decision making while Chamberlin describes read/write/other and time-based decision making. For this additional reason this claim is not obvious.

Claim 21

Claim 21 was rejected under 35 U.S.C. §103(a) as being unpatentable over Holmes in view of Chamberlin. Holmes does not describe each and every element of claim 20. Claim 21 depends from claim 20 and thus is similarly not anticipated. Chamberlin does not cure the defect of Holmes. Chamberlin discloses giving priority to access requests in the following order: read, write, other. Then, if a time based deadline is approaching, Chamberlin discloses an emergency mode where priority is given based on proximity to time based deadline expiration. Thus, elements of claim 20 and claim 21 are still missing, even in the combination of references. Therefore this claim is not obvious.

Additionally, claim 21 recites restricting I/O requests based on a threshold number of I/O requests. The threshold is a numerical count of access requests. Neither reference describes a threshold based on a numerical count. Holmes describes read/write head proximity based decision making while Chamberlin describes read/write/other and time-based decision making. For this additional reason this claim is not obvious.

Claim 28

Claim 28 was rejected under 35 U.S.C. §103(a) as being unpatentable over Holmes in view of Chamberlin. Holmes does not describe each and every element of claim 25. Claim 28 depends from claim 25 and thus is similarly not anticipated. Chamberlin does not cure the defect of Holmes. Chamberlin discloses giving priority to access requests in the following order: read, write, other. Then, if a time based deadline is approaching, Chamberlin discloses an emergency mode where priority is given based on proximity to time based deadline expiration. Thus, elements of claim 25 and claim 28 are still missing, even in the combination of references. Therefore this claim is not obvious.

Additionally, claim 28 recites causing a processor to set a threshold value of access requests and selectively metering based on this number. The threshold is a numerical count of access requests. Neither reference describes a numerical count. Holmes describes read/write head proximity based decision making while Chamberlin describes read/write/other and time-based decision making. For this additional reason this claim is not obvious.

Claim 29

Claim 29 was rejected under 35 U.S.C. §103(a) as being unpatentable over Holmes in view of Chamberlin. Holmes does not describe each and every element of claim 25. Claim 29 depends from claim 25 and thus is similarly not anticipated. Chamberlin does not cure the defect of Holmes. Chamberlin discloses giving priority to access requests in the following order: read, write, other. Then, if a time based deadline is approaching, Chamberlin discloses an emergency mode where priority is given based on proximity to time based deadline expiration. Thus, elements of claim 25 and claim 29 are still missing, even in the combination of references. Therefore this claim is not obvious.

Additionally, claim 29 recites the metering including limiting a number of the access requests. Neither reference describes limiting a number of access requests. Holmes describes reordering based on read/write head proximity while Chamberlin describes read/write/other prioritization and emergency prioritization. Neither of these prioritization schemes discloses limiting a certain number of access requests based on region membership. For this additional reason this claim is not obvious.

Claim 11

Claim 11 was rejected under 35 U.S.C. §103(a) as being unpatentable over Holmes. Claim 11 depends from claim 1 and claim 1 has been shown to be not anticipated. If claim 1 is not anticipated under §102 because the reference does not disclose every claimed element, then claim 11 cannot be obvious under §103. Additionally, claim 11 recites the system including tables that define which data is to be metered in the first region. The Office Action takes official notice that "tables are an efficient way to organize information for controlling a disk storage device." While disk storage devices may indeed use tables and may even use them to control organization, the reference is silent concerning using a table to define data associated with a first region (e.g., perimeter, hub) where region membership is the basis upon which selective metering will occur. For this additional reason this claim is not obvious.

Claim 12

Claim 12 was rejected under 35 U.S.C. §103(a) as being unpatentable over Holmes. Claim 12 depends from claim 11 and claim 11 has been shown to be not obvious. Additionally, claim 12 recites the system including tables that define which data is to be metered in the first region and that define a file, an application, or a data location. The Office Action takes official notice that "tables are an efficient way to organize information for controlling a disk storage device." While disk storage devices may indeed use tables and may even use them to control organization, the reference is silent concerning using a table to define data associated with a first region (e.g., perimeter, hub) where region membership is the basis upon which selective metering will occur. Therefore it follows that the reference is also silent concerning using this type of region defining table to also define a file, application, or data location. The reference therefore does not include the linkage between an outside entity like a file, application, or data location and a predefined disk region that can be used to selectively control metering. For this additional reason this claim is not obvious.

Claim 36

Claim 36 was rejected under 35 U.S.C. §103(a) as being unpatentable over Holmes in view of Li. Claim 36 depends from claim 35. Claim 36 claims a database system. Neither Holmes nor Li describe a database system. Holmes describes processing associated with a storage device. Li also describes processing associated with a storage device. Thus, even the combination of references does not disclose a database system. For this reason this claim is not obvious.

Additionally, claim 36 recites an allocation logic being configured to put data in a selected region based on a frequency of access to the selected data. Holmes does not alter where data is written. Holmes simply puts data where it is intended. It may change the time at which that data is written based on read/write proximity based reordering, but it does not select the region to which data will be written. Li counts accesses to a logical cylinder and assigns the logical cylinder to a physical cylinder based on the access count. However, Li does not do this in the context of a database system nor does Li do this in the context of metering. For this additional reason this claim is not obvious.

## Conclusion

For the reasons set forth above, claims 1-37 patentably and unobviously distinguish over the references of record and are now in condition for allowance. An early allowance of all claims is earnestly solicited.

Respectfully submitted,

Dec. 27, 2005

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